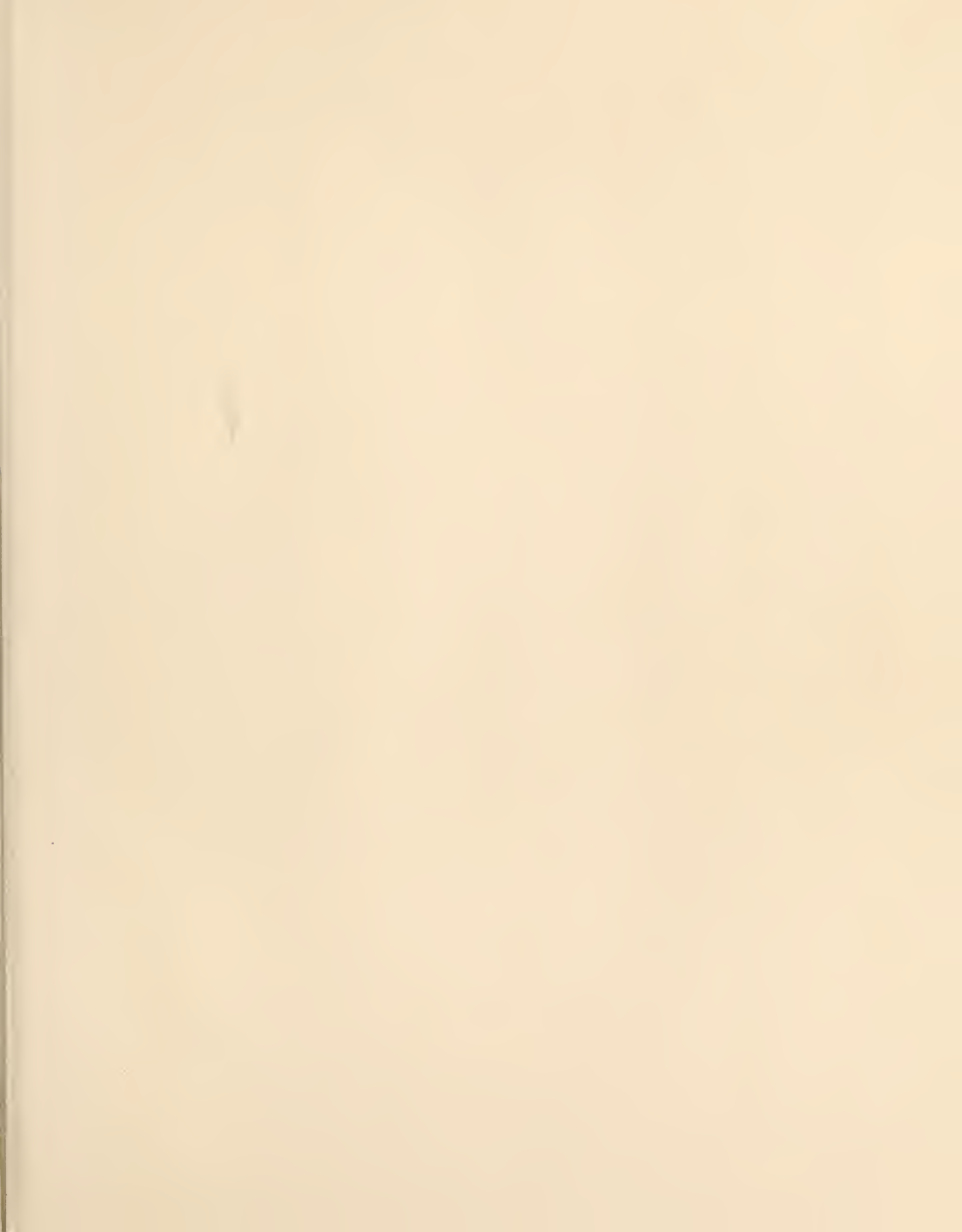






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President Robert G. Goelet gives a special tour of the World of Birds to Trustee Lila Acheson Wallace, whose generosity made this unique building possible.

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REPORT OF THE PRESIDENT

In human society the city has been the germinal disc of culture: the crucible and the forum which has produced man's most far-reaching ideas. Within cities, zoological parks and aquariums have become the only outposts of living wildlife.

The foregoing facts are basic to the New York Zoological Society's perception of its tasks—to its contributions in education, conservation, and research. In a time when the earth's basic ability to support its growing human burden is being questioned, and when some hundreds of kinds of living things face imminent extermination, the importance of the Society's role would seem to have moved beyond question. Yet this is not the case. The problem of

financial support for our programs has become acute.

Economy-minded critics of cultural institutions like the Bronx Zoo and the New York Aquarium sometimes seek to reduce their modest support in favor of "basic city services." Less than 1/10 of 1% of our great city's budget is for the support of cultural institutions. Never mind that the economies suggested would be so small a portion of that budget as to be of little consequence, it is a view oft presented.

In the final analysis, the city dweller and his representatives in government must decide whether the tiny addition in "basic services" so won compensate sufficiently for the loss of cultural institutions to the fabric of city life. Because most of the nation's disadvantaged live within its cities and

cannot travel far beyond, we must also ask whether their opportunities and horizons should be still further reduced? In this connection, it is interesting to note that it was not the world's government officials, nor even its economists who forecast the famines and related disasters now confronting man. It was the world's biologists—not excepting the New York Zoological Society's Fairfield Osborn, William Hornaday, and William Beebe.

The challenges facing the Zoological Society in its struggle to support its role and to meet its obligations toward both man and beast have become critical. We will need help if we are to fulfill them.

Robert G. Goelet

Robert G. Goelet

REPORT OF THE GENERAL DIRECTOR

What have the following five facts in common?

The Serengeti lion averages twenty-one hours of rest each day.

Most zoo-goers are adults.

The right whale is a playful animal, and males tolerate each other even at the peak of the mating season.

Horseshoe crab blood has made possible a new test for the early determination of peritonitis in human beings.

Endangered desert pupfishes may be bred in captivity with the same techniques used to breed tropical "swordtails."

The answer to our question is that each new bit of information was developed in the New York Zoological Society's 1973 programs of education, conservation, and research.

Public Service

Service is the principal theme of the Society's efforts, and, at year's end, we could clearly account for its contributions. Attendance at the Bronx Zoo and the New York Aquarium, despite poor weather, an uncertain economy, and fuel shortages, reached more than two-and-three-quarters million. School children visiting the two institutions in organized classes totaled 414,745. A four-year retrospective review of the Society's programs in field conservation and wildlife protection showed that seventy-seven projects had been completed or were in progress in more than forty countries, the broadest such program based in the United States.

Large segments of the Society's living collections were established in new exhibits at both the Zoo and Aquarium; and the fish and birds, reptiles and mammals bore testimony to their well-being through remarkable reproductivity. As the year ended, the distribution of Zoo surpluses, even of species extinct in nature, began to pose a problem! In this connection, the paucity of space in existing zoos must be remembered: all the zoos in the world could fit comfortably into the Borough of Brooklyn.



A Vital Role in the Community

The role of zoos and aquariums in human society has frequently been discussed by the General Director in the Zoological Society's annual report. Recently, an outsider's study has become available. Few kinds of cultural institutions have been subjected to as probing a review as the one that sociologist Dr. Neil H. Cheek, Jr., performed on zoos in the continental United States. With funds from the United States Department of the Interior and the NYZS, Dr. Cheek completed a survey of zoo visitors based upon an area-probability sample calculated to represent the total adult population of the United States. The survey was conducted by an independent firm. Among Dr. Cheek's findings, as reported in the June 1973 *Animal Kingdom*:

Going to the zoo apparently means more to people than seeing animals. A day at the zoo seems to strengthen ties between humans and mother nature. Two-thirds of the zoo-goers in the survey said they felt they learned more about nature. Almost half said they felt closer to nature at the zoo, and another forty percent went even further: they said the zoo helped them feel how beautiful life is.

Talking with companions about animals was near the top of the list of things people do at a zoo. Almost half said they shared their experiences at the zoo with others and forty-two percent said one of their zoo activities was "getting to know my children better."

However a person came to visit the zoo, it was nearly always a pleasant experience. Almost ninety-two percent of the survey respondents said they were glad they went.

Despite this testimonial, zoos must address themselves more directly to the educational problem posed by the inconsistency of man's attitude toward other animals.



For many years, the Society's General Director, William G. Conway (above, right), has been a leader in the conservation of flamingos.

Inconsistency and Individuality

Within the past few years a new concern for the well-being of wildlife has gradually arisen. Zoos and aquariums have played a crucial role. It seems likely that the popularization of whales and dolphins in oceanariums contributed greatly to a basis of public opinion which ultimately led to the restriction of whale-product imports. Nevertheless, man's behavior suffers sorely from his difficulty in understanding other species—and his inconsistency in applying what he has learned.

Each year nearly 70,000 monkeys are imported from nature to be killed in bio-medical experiments. Such work has resulted in the saving of hundreds of thousands of human lives, yet it too often includes needless cruelty—and dubious projects. Moreover, each year wild primates become rarer because their forest habitats have been cut and their numbers depleted. There is still no significant captive breeding program—

no provision for the future. The inconsistency does not stop here.

American tuna fishermen continue to net and drown about 250,000 dolphins each fishing season (despite prohibition by the Marine Mammal Act). Simultaneously, American officials castigate Russia and Japan for their unceasing slaughter of whales on the high seas.

A deer killed by youthful vandals at the Central Park Zoo evoked an outpouring of public outrage, while the killing of 75,000 deer by licensed hunters in New York State went unremarked. Indeed, zoo-goers have been known to begrudge a snake its weekly mouse, just before going home to a sirloin steak dinner. These latter examples emphasize a special contribution that zoos can make in the taming of inconsistency—the individualization of animals.

Animals are individuals, each differing, more or less, from others of its kind as well as from other species. On television screens and even in nature, the whale becomes a scarcely distinguished part of its pod, the goose of its flock, the fish of its school. Too often human comprehension of animals veers wildly between the maudlin misunderstanding of those whose naive notions about animals were acquired from children's books to the impersonal, statistical distancing that is characteristic of the mentality of a successful bomber pilot.

But zoos bring animals up close, as both readily distinguishable individuals and members of animal herds or societies. While the sentimental may survive such confrontations, it seems difficult for the bombardier.

The departmental reports contained on the following pages should bring our members and friends "up close" to the Society's progress in education, conservation, and research.

Personnel and Organization Changes

Following an in-depth study, the Society effected a number of organizational changes during the year. Walter A. Lerchenfeld was named Director of Finance and Administration; John McKew became Director of Special Projects; F. Wayne King was appointed Director of Conservation and Environmental Education; Charles B. Driscoll became Director of Operations at the Zoo, and George D. Ruggieri was named Associate Director of the Aquarium.

Mr. Lerchenfeld's appointment signifies greater emphasis on the Society's revenue-producing endeavors, while Dr. King's re-establishes the Society's Department of Conservation and brings greater coherence to its far-reaching efforts in wildlife protection. In his new office, Dr. Ruggieri, already Director of the Osborn Laboratories of Marine Sciences, will formalize the *de facto* interdependence of the Laboratories and Aquarium.

William G. Conway

William G. Conway



At top: "Skyfari" gondola skims the World of Darkness. Above, left: Coscorobas and guanacos in the South America exhibit. Above, right: An exhibit in the Main Fish Hall at the New York Aquarium.

HIGHLIGHTS OF 1973

Visitors took to the air for a bird's-eye view of the Bronx Zoo from the new aerial tramway. Opened to the public in May, "Skyfari" proved to be an instant success, combining rapid transportation with a sense of adventure.

South America, a new exhibit, was the feature attraction at the members garden party in June. In the largest display area, guanacos and coscorobas practice the good neighbor policy.

The renovated Main Fish Hall at the New York Aquarium enables visitors



*A Rothschild's myna
in the World of Birds.*

to view a variety of underwater habitats through "windows on the sea." Smaller exhibits on the opposite wall focus on aspects of "fishy" behavior.

The beautiful Rothschild's myna, an endangered species found only on the island of Bali, was bred at the Zoo for

the first time in 1973. It was only one of a large number of notable breedings at the World of Birds during its first full year of operation.



Four young Asian elephants arrived at the Bronx Zoo—a first step in stocking the future Tropical Asia exhibits.



Joe Willie, the Bronx Zoo's third baby gorilla.

MAMMALOGY

The construction of the Rare Animals Range Exhibits (RARE) was completed by the end of the year. Some landscaping, graphics, and exhibit work remained to be done, but the animal management facilities were finished and the breeding stock was moved in without incident. This new area will provide proper management facilities and allow the department to maintain significantly larger herds of three endangered species—wisent, Pere David deer, and Mongolian wild horses, all of which are extinct in the wild. Viable births in these species during 1973 were five Pere David deer and one wisent.

A single Siberian tiger cub, born to a young, inexperienced mother, had to be removed for hand-rearing. The failure of new mothers to rear their first-born is common among some animal species, and it is expected that this mother will be successful with subsequent births. The breeding group of Siberian tigers, two males and five females, has been planned to include most of the extant captive strains. Most of the Zoo's tigers are still young, and by the time they are moved to new facilities in the Tropical Asia exhibits area, a vigorous breeding program should be underway. The goal for the tigers, as with all of the department's breeding programs, is to maintain an age-structured population with continuous breeding.

In 1972 the Bronx Zoo's first baby gorilla was born, but the youngster, Hodari, had to be removed from his mother, Sukari, for hand-rearing. In April, 1973, another female, M'Wasi, was due to give birth. However, complications arose and it was necessary to perform a caesarean section. Although the infant was lost, M'Wasi made a complete recovery and rejoined the adult group of five lowland gorillas.

Sukari had her second baby, a male named Joe Willie, in September. All went well for three weeks before the baby suffered a broken arm and had to be removed for hand-rearing. Although the adult gorillas are reproductively mature, they are not fully grown, and it is hoped that the females will become good mothers in the future.

A male baby gorilla, Mopie, being hand-reared at the National Zoo in Washington, D.C., was sent to the Bronx Zoo to be raised with Hodari, in an effort to provide important gorilla contacts for the proper development of both babies.

Two Kodiak brown bear cubs were born early in the year, the first offspring born to any of the young animals in the exhibit. Construction began on non-exhibit maternity/holding areas for both the brown bears and polar bears, which will afford the females the necessary isolation and security for rearing cubs.

Construction and exhibits work was completed on the South America exhibits for guanacos, tapirs, giant anteaters, peccaries, red brockets, Patagonian cavies, capybaras, rheas, and other birds. The exhibits were opened to the public in June. The non-exhibit breeding facilities that will enable the department to maintain breeding groups of these species will be completed in 1974. Three male and four female South American tapirs were acquired to initiate a breeding program for the species, and the first birth occurred during the year. In addition, cavies, guanacos, peccaries, and brockets were born in the new area.

During 1973, there were a total of 223 births of 55 species of mammals in the collection. Among the more important not previously mentioned were a proboscis monkey and a titi monkey. Breeding programs in several species of hoofed animals resulted in many births, including eleven Formosan sika deer (another species extinct in the wild), and several species of bats continued to breed successfully in the World of Darkness.

Important animal acquisitions included two male and two female wolves from Alaska, and hammerhead bats from Africa. A Malayan tapir and four Asiatic elephants, one male and three females, were acquired in preparation for the future Tropical Asia exhibits.

ORNITHOLOGY

During its first full year of operation, the World of Birds proved to be one of the major attractions for all Zoo visitors, but especially for student groups, natural history and garden clubs, scientists, and photographers. The fact that a number of species reproduced in these new surroundings has been of particular importance, as the federal restrictions on most bird imports, imposed during 1972 following outbreaks in the United States of exotic Newcastle disease, have been continued throughout 1973.

Most notable among the breedings at the World of Birds were six Palawan peacock pheasants (an endangered species from the Philippines), and two green wood hoopoes (only the second recorded captive breeding for these strange, cavity-nesting relatives of the hornbills and kingfishers).

A total of nearly 400 birds were reared in the collection during the year, including a Caribbean flamingo (the fourth reared here since 1966) and a tufted puffin (the second reared here; these represent the only known captive propagation of this species and of the family Alcidae). Red-gartered coots nested successfully for the second year and reared five chicks.

Even more gratifying was the continued breeding of several species that have been reproducing in the collection on a long-term basis. Fifty-two greater rheas, seven white-quilled black bustards, six East African pratincoles, fourteen European avocets, six black-winged stilts, and six African spur-winged plovers are all included in this category. The bustards represent the only breeding group of this species—indeed, of the family, Otididae—in a New World zoo, and three generations of spur-winged plovers have produced more than seventy chicks here in the last eight years.

The most prolific breeders in 1973 were a group of Kurrichane hemipodes, small quail-like birds that are actually related to the cranes and rails. After the females lay the eggs, the males take on all the duties of nesting, an almost impossible task in the confines of an exhibit. Six female hemipodes laid more than 430 eggs and 115 chicks were hand-reared by keepers.

Species breeding at the Zoo for the first time were the Australian maned goose, Baikal teal, hooded merganser, giant laughing kingfisher, African yellow-vented bulbul, and the rare and beautiful Rothschild's myna.

A number of breeding loans were made to other zoos during the year, including both unmated specimens and pairs that were progeny of groups breeding at the Bronx Zoo. One example in the former category was a Philippine monkey-eating eagle that was sent on loan to the Philadelphia Zoo as a possible mate for an egg-laying female in its collection. Pairs of white-quilled black bustards, tawny frogmouths, East African pratincoles, and African spur-winged plovers were loaned to the National Zoo in Washington, D.C., and a pair of Lilford's cranes was loaned to the International Crane Trust, Baraboo, Wisconsin.

Several major breeding loans were also received by the collection. The new arrivals included a female Costa Rican quetzal from the National Zoo, a male South American condor from the Milwaukee Zoo, and three Indian pied hornbills from Seattle's Woodland Park Zoo.

A new phase of the breeding program was instituted during the year with the aid of the department's Field Associates in Ornithology. These exceptional aviculturists assumed the management of selected birds from the Zoo. Frank Y. Larkin, working with pair combinations between his own collection and Zoo birds, was successful in hatching and rearing clutches of pennant parakeets and turquoisine parakeets. Winston Guest, Jr., has taken on the management of the Zoo's trio of Bewick's swans, and Ostrom Enders continued work with three pairs of Hawaiian geese, or nene. William K. Macy, Jr., presented pairs of pink-footed geese and Patagonian crested ducks. Charles Webster expanded the areas in which he provides advisory counsel to include our horticultural problems.

Two new Field Associates were elected to three-year terms. They are the noted pheasant expert, Charles Sivelle, and the well known dean of aviculture, Dr. Jean Delacour, who has served as unofficial advisor to the Society for more than thirty years.

The Bronx Zoo loaned "Legs," its single male Philippines monkey-eating eagle to the Philadelphia Zoo for a propagation project.



HERPETOLOGY

Acquisitions of significance during 1973 included five amethystine pythons from Australia's Taronga Park Zoo and three taipans from the Australian Reptile Park. Two young female Cuban crocodiles were acquired from Winnipeg's Assiniboine Park Zoo and will serve as potential mates for the collection's large male. The Arizona Game Commission donated three beautifully colored Gila monsters.

These, together with two Mexican beaded lizards and a juvenile Gila monster which were purchased, were placed on public view in the desert exhibit. Additional reptile purchases and donations included two adult king cobras, two black-lipped cobras, a series of parthenogenic whiptail lizards, five Cape Uta lizards, and several Armenian vipers and Schweitzer's vipers. Two confiscated Nile crocodiles and two West African dwarf crocodiles were presented to the collection by the U.S. Bureau of Sport Fisheries and Wildlife.

Amphibian additions included a male golden frog, received as a gift from the Ft. Worth (Texas) Zoo, and several Surinam toads. A series of Halloween-cat tree frogs, smoky jungle frogs, strawberry frogs, and marine toads were also added to the collection.

The department sent numerous surplus animals, many of which had been received in the Zoo as unsolicited donations, to other United States zoos. In addition, the single female Philippine crocodile and two juvenile Johnson's crocodiles were sent to the Atlanta Zoo and Honolulu Zoo respectively to contribute to their breeding programs for these species.

The most significant acquisition of the year was the herd of twenty-five Madagascan radiated tortoises purchased from a private dealer who had collected them himself in 1969. This group has been set up in a propagation compound in Florida where they are being directly supervised and maintained by Dr. Walter Auffenberg.

Both the reticulated pythons and Burmese pythons successfully bred during the year. Although the large clutches of eggs deposited by each species presented the department with many difficulties during their incubation, three of the reticulated pythons and thirteen of the Burmese pythons hatched. For the fifth consecutive year, an Egyptian cobra female deposited a clutch of eggs, and of the twenty-eight eggs, sixteen hatched.

The department's initial attempt to breed the rare bog turtle was also successful. Four of five eggs deposited by one of the collection's two females proved fertile and hatched after a fifty-day incubation period.

Behind-the-scenes improvements included the replacement of all antiquated pneumatic temperature controls and thermostats. Sensors and automatic cut-off valves were also installed on all seven mixed-water systems. Additionally, the Chinese alligator enclosure and wooden pool were completely rebuilt.

To alleviate the threat of animal losses due to mechanical failures, the Honeywell Corporation has designed a monitoring panel which will provide electrical surveillance of the enclosures and of the heating and cooling systems, and which will signal an alarm when a malfunction occurs. It will be installed during 1974.

Opposite, at top: A bog turtle hatchling, one of four bred for the first time by any zoo, makes a rare handul.

Opposite, left: The herpetology department continues its attempts to breed the endangered Cuban crocodile.

Opposite, right: Reticulated pythons again produced a clutch of eggs, three of which hatched successfully.





NEW YORK AQUARIUM

The major activity at the New York Aquarium for 1973 was the complete renovation of the Main Fish Hall, a project made possible by a grant from the Charles E. Merrill Trust. After several months of construction, what was once a long hall with exhibits on each side was transformed into a deep, dark subterranean "cave," with views into various underwater habitats.

Along the north wall of the Main Fish Hall are eight new exhibits, five of which are devoted to coral reef habitats. The coral reef community provides such a variety of ecological niches that fully thirty-five percent of the 20,000 or so species of living fishes are found there. The remaining habitat exhibits are the mangrove community of low, swampy islands whose shallow waters provide a nursery for such species as tarpon, bonefish, and permits; the grassy flat, where dense growths of turtle grass—one of the few flowering marine plants—provide homes for sea horses, filefish, and flounders; and the Gulf of Mexico exhibit, for the larger fishes of southern waters, such as barracuda, red snapper, and pompano.

The south wall contains seven smaller exhibits that illustrate principles of biological survival. Symbiosis, camouflage, body form, and coloration all play a part in survival beneath the sea. Fishes also have particular patterns of behavior that are specific to the species, such as the yellowhead jawfish that excavates a burrow into which it descends tail first, rising and sinking in an underwater ballet. These exhibits are a focal point for the Aquarium's educational programs.

Two other new features installed at the Aquarium during the year were the Children's Cove and the Sea Dome. The Cove, which introduces young visitors to some of the simpler forms of aquatic life through sight and touch, proved to be very popular. Adjacent to this area, the Sea Dome, a small geodesic building, was erected for the presentation of films, slides, and short talks to school children and organized groups. The dome was a gift to the Aquarium from the New York Zoological Society's Women's Committee.

The whale, dolphin, and sea lion show was entirely revised with the assistance of Dr. Helmut Adler, a physiological consultant from the American Museum of Natural History. Perhaps more accurately described as a training session, the new show centered around Alex, one of the Aquarium's beluga whales. It was designed as a scientific investigation of whale behavior, as well as a public demonstration of how scientists gather data on animal psychology. Alex was taught a series of behaviors. By performing them, it is hoped he will reveal what colors and sounds whales can perceive, how they navigate by echolocation, and how they learn. More sophisticated demonstrations will be devised as patterns of whale behavior emerge.

During 1973 the Aquarium's penguin colony hatched five chicks, the first breeding in several years. Among the fishes that bred successfully were the clownfish and the sea horse, both species which especially delight visitors.

An Aquarium collecting trip to Bermuda to secure several species of the colorful parrotfish, as well as other interesting species from those waters, returned with a total of 139 specimens of eighteen species. Many of these were placed on display in the renovated Main Fish Hall exhibits.



Veterinarian Emil Dolensek supplies tender loving care to a new-born baby tiger in the Zoo's animal hospital.

ANIMAL HEALTH

Concentration on individual animal therapy and diagnostics during the year was aided by the purchase of automated laboratory equipment with a Bodman Foundation Grant. Investigations were begun into blood gas and electrolyte composition of many species of birds, reptiles, and mammals. This new equipment, supplemented with that purchased last year with New York Zoological Society funds, has provided modern intensive-care monitoring for the animals.

The addition of a resident pathologist to the animal hospital staff enabled the veterinarian to give more time to increased clinical responsibilities. The program in comparative pathology is being sponsored by the Women's Committee of the New York Zoological Society and by the Animal Medical Center.

The paternity of the Zoo's baby gorillas has been determined by chromosome typing. This project was conducted with a team of consultants from Columbia Presbyterian Hospital including a neonatologist, pediatrician, and obstetrician-gynecologist.

One of the most difficult aspects of zoo animal medicine is the great size difference even among closely related species. In 1973, two primates received caesarean sections because of difficulty in giving birth. One animal was a 200-pound lowland gorilla, the second was a two-pound talapoin monkey.

A total of 775 necropsied specimens, 1,184 fecal specimens, 307 hematology specimens, and 280 microbiology specimens were recorded by the department during the year.

DEPARTMENT OF EDUCATION

The Society received support from the New York State Council on the Arts to continue its educational programs at the Zoo and Aquarium. A grant from the Edward John Noble Foundation initiated planning for the development of the Zoo's Baird Court area as a new active "learning center" for public education. The Noble Foundation also funded the development of a "wet lab" for student use at the Aquarium and supported the Zoo's special courses for handicapped children, "All About Animals."

School group attendance at the Zoo set a record of 301,745. Classes were given to 15,856 students in 641 classes. The Aquarium also had excellent attendance; almost 113,000 children came in school groups, and, including tours, some 30,000 young people were recipients of its educational programs. Adding the attendance of the Children's Zoo and the audio-visual programs, the total number of school children touched by the Society's educational services at the Zoo and the Aquarium during 1973 was 68,372.

New York Zoological Park

The Zoo's program for elementary school children, "Animal Discovery," provided intimate contact with animals for almost 10,000 youngsters. "All About Animals" grew in 1973 from a pilot project for visually handicapped children to a popular program for youngsters who are deaf, blind, retarded, and afflicted with cerebral palsy. Late afternoon courses for working high school students were offered through an affiliation with the City-As-School, PM High School, and Satellite Academy programs.

Junior high school students were offered a three-meeting mini-course, "Close-up on Animals," which examined the three major groups of vertebrates—mammals, birds, and reptiles. "Animals and Their Environments" was a new program for high school students; recent developments in the fields of animal behavior, conservation, and ecology were discussed in classes at the Zoo, with the teachers providing advance preparation and follow-up instruction in the schools. Ten-week courses in vertebrate zoology were given at eight local junior high schools, and included Zoo-based term projects. In all, almost 3,000 secondary students were involved in these courses.

The special single-visit classes that supplement "Man: A Course of Study" continued. Almost 2,000 students from fourth grade through junior high school have participated in this ungraded program. In connection with this course, for which the Zoo has been certified as a teacher-training center, a summer workshop was given to eighteen teachers from throughout the Northeast on the central question: "What Makes Man Human?" In addition, college students from New York, New Jersey, Massachusetts, and Pennsylvania availed themselves of the education department's services, and successful summer courses were given for early elementary, high school, and senior citizen groups.

New York Aquarium

The educational program at the Aquarium continued to expand and to improve its services. Junior programs were offered on "What Is a Fish?," "Animals without Backbones," and "Survival in the Sea." Guided tours for fifth-graders and self-guiding tours were also available. Senior programs were offered on several topics, including



"Evolution of Fish," "Adaptations to an Aquatic Environment," and "Beach Ecology," with self-guiding tours available for teachers. Fifteen new volunteers were added to the Aquarium Senior Docent ranks to give guided tours and to assist behind-the-scenes. The Children's Cove, a contact area that introduces youngsters to some of the simpler forms of marine life, was opened in May. Exhibits included an invertebrate "touch-it tank" and a sand dune. Junior docents and students from the Neighborhood Youth Corps assisted visitors with the handling of animals and answered questions. A geodesic Sea Dome was erected near-by to present audio-visual programs, and live-animal presentations and lectures were held there during the summer.

Educational programs were conducted with Districts 21, 22, and 75 and with the City-As-School. Workshops and mini-courses for teachers were given on how to use the Aquarium as a teaching resource, and a conference was held to make school principals aware of the Aquarium's programs. A five-month program on marine occupations was instituted in conjunction with John Dewey High School. Twenty-five students, placed in positions to assist Aquarium personnel, received invaluable on-the-job experience.

Early Childhood Education

Attendance at the Children's Zoo during 1973 was 339,632. Pre-school programs consisted of special guided tours for 1,452 children from day-care centers and of two four-day workshops for forty-one teachers from the New York City metropolitan area.

Camels and ponies were trained and equipped with new tack for the Riding Track, which was reorganized as part of the Children's Zoo operation.

The Zoo's work-study program for students at DeWitt Clinton High School was expanded to include the Children's Zoo. In addition, girls from Walton High School began an intensive training program in large animal care at the Pony Barn.

Audio-Visual Services

The regular operation and maintenance of audio-visual supplies and equipment has taken on larger proportions with the development of these services in the World of Birds and World of Darkness. A three-film series was presented in cooperation with the New York Botanical Gardens and Wave Hill Center. Film showings to education classes at the Zoo and staff lectures have reached approximately 20,621 people.

Opposite, at top: A camel provides a light moment during a course in large animal care given for Walton High School students.

Opposite, left: A partially-sighted youngster examines a chick as part of a special educational program at the Zoo.

Opposite, right: The Children's Zoo, with its friendly llamas, is an old favorite of many visitors.

FRIENDS OF THE ZOO

They can be found just about anywhere around the Zoo, on weekdays and on weekends, giving tours and answering questions. Identified by their blue-and-white buttons, they are the "Friends of the Zoo," the volunteers who provide personal contact between the visitors and the Zoo exhibits.

A committee of the New York Zoological Society, the Friends of the Zoo offers three types of educational programs throughout the year: weekday teaching tours for school groups; weekend tours and activities for the general public; and summer programs of tours and environmentally related activities for the general public and day camp groups. The statistics given below indicate the numbers of people directly reached through these educational programs and the numbers of volunteers involved.

Bronx Zoo Weekday Program

Number of Students: 12,638

Number of Classes: 451

Number of Volunteer Hours: 2,599

Bronx Zoo Weekend Program

Number of Volunteers: 33

Bronx Zoo Summer Program

Number of Volunteers: 35

During the year the volunteers also assisted in welcoming the Society's members to the annual meeting at Avery Fisher Hall, conducted tours for the opening of the new South American exhibit for the Garden Party, and gave animal demonstrations and mini-tours on Children's Day.

A program of seminars and field trips were established to provide a "continuing education" for the Friends themselves. Included was a seminar given by the Society's General Director William G. Conway on "Zoo Perspectives: Near and Far," and field trips to the Audubon Nature Center in Greenwich, Connecticut, and the Jamaica Bay Wildlife Refuge.

The Friends' activities have concentrated in two main areas: the training of qualified guides and the development of educational tours. Seventy-six persons were taught in three twelve-week training courses, bringing the total number of guides to 160. These volunteers offer a service that not only makes the zoo-goer's visit more educational but will also attract more visitors to the Zoo.



*A volunteer Friend of the Zoo
learns the techniques of
animal handling.*



Graphics at the new South America exhibit inform a group of school children about the ecology of the region.

EXHIBITION AND GRAPHIC ARTS

The main project at the beginning of the year for both departments was the renovation of the Main Fish Hall at the Aquarium. This exhibit area was redesigned to enhance the viewing conditions for the public. The walls, floor, and ceiling of the hall were covered with black carpeting to create

an illusion of spatial expansion. Curved baffles were constructed along one wall, isolating each of the exhibits, while the tanks on the opposite side were angled to eliminate light reflections.

The new exhibits were pre-fabricated of fiber glass at the Zoo, oven-baked to eliminate toxicity, and transported by truck to the Aquarium to be assembled on the site. Special light boxes were designed and constructed for the educational graphics and identification labels.

For the Zoo's new South America exhibit, six simulated termite mounds were created from cement. Again, specially constructed display boxes were designed for the graphics and labels. On the two entrance archways for this outdoor exhibit area are silk-screen panels, among the largest ever to be pulled in New York City.

With the completion of these projects, the departments began work on future exhibits, including the graphics and entranceways for the Rare Animals Range Exhibits, the renovation of the sea cliffs scene in the Aquatic Birds Building, and Tropical Asia.

The exhibition department also spent much of the year making trees. Two steel-reinforced cement trees were constructed for the large interior gorilla exhibit at the Great Apes House, and a steel-reinforced tree and earth bank effect was built in one of the smaller interior exhibits. In the World of Darkness, a hollow tree for bats was built for the South American jungle exhibit. It features a viewing-port for Zoo visitors. On Lion Island, two live trees were fitted with protective fiber glass jackets made to resemble the natural trunks. And finally two large oak trees were cast in fiber glass and added to the stockpile for Tropical Asia. This is in addition to a dozen trees previously made for this next major exhibits area.

CONSTRUCTION AND MAINTENANCE

During the first half of the year, the construction and maintenance departments worked with outside contractors to complete the South America exhibit, which opened to the public in June. This three-acre, front-moated exhibit features a large pond and two visitor viewing areas, as well as associated holding pens for rheas, guanacos, waterfowl, caviés, anteaters, collared peccaries, red brocket deer, capybaras, and tapirs.

The construction of a 2,200 linear-foot aerial tramway, "Skyfari," was completed by June. It consists of a drive and tension terminal, fifty-four gondolas, and a storage building. The gondolas ride about 100 feet above the Zoo, from the north end of the Crotona parking field to east of the African Plains. Six towers, ranging in height up to 104 feet, support the running cables.

A major project was the redevelopment of the old deer ranges into the new Rare Animals Range Exhibits. The area encompasses the land laying north of the Pony Barn to Fordham Road. Three large barns, a feed shed, and wood-plank holding areas were constructed. Other work included front-moating, and partition fences.

The maintenance department landscaped all the preceding projects, including grading, top soil, and seeding of the animal exhibit areas. In all, several thousand trees, shrubs, vines, and ornamental grasses were planted, from early spring to late fall.

Other smaller projects completed during 1973 included replacing twenty-nine exhibit and shift doors in the Monkey House; painting exhibit areas in the Small Mammal House, Monkey House, Lion House, and other areas of the Zoo; providing new electric service to the Kangaroo House, Elephant House, Ostrich House, and World of Darkness; and building a new concrete pool for crocodilians in the Reptile House.

MEMBERSHIP

This was a banner year for the membership department. A total of 2,119 new members was enrolled, and as of December 31, membership stood at 8,255.

In spite of weather that sometimes left much to be desired, the members' events were well attended. These included the Annual Members' Meeting in January at Avery Fisher Hall, Dr. Walter Auffenberg's film-lecture on the Komodo monitor, the spring members events, the Garden Party, and Children's Day at the Zoo.

Two programs in 1973 met with overwhelming acceptance and will be repeated next year. The first was a spring evening tour of the Zoo, at which some 2,000 members were enthralled with the park at dusk. The second was an expanded members' travel program, which included a bird tour of Central America and a "whale watch" on the St. Lawrence River in Canada.

WOMEN'S COMMITTEE

The first full year of operation for the Women's Committee was an active one. Committee membership reached 122 by year's end, and under the able leadership of the co-chairmen, more than \$80,000 was raised for the Society. Among the projects funded by the Committee were the educational Sea Dome at the Aquarium, new labeling in the World of Darkness, and the acquisition of three Mongolian wild horses for the Zoo's Rare Animals Range Exhibits.





Top, left: A crane hoists the tall towers for "Skyfari" into position. Bottom, left: Thanks to the Women's Committee, the Rare Animals Range Exhibits acquired three young Mongolian wild horses. Above: Sense boxes encouraged active participation by the Society's members at the annual meeting in Avery Fisher Hall.

PUBLICATIONS AND PUBLIC RELATIONS

The most popular news story generated by the department (press clippings arrived from all across the country) was the saga of "Junior." The Zoo's famous king cobra died on February 26, 1973, after a long life of fifteen years, seven months in the Reptile House. Although the king cobra has a reputation as an aggressive snake, Junior was amazingly docile—at least where his keepers were concerned. His "sweet" nature, unfortunately, did not extend to others of his own kind. Females, introduced to Junior as possible mates, were promptly rejected. After several such failures, no more attempts were made to breed Junior, and he died a confirmed bachelor.

The World of Birds continued to receive widespread publicity during 1973. It was photographed by the United States Travel Service, discussed on radio shows, filmed for television, featured as a cover story for the Sunday *New York Times* magazine, and given an award by the New York State Council on the Arts.

Other major news stories of the year included the opening of the renovated Fish Hall and the new whale/dolphin/sea lion training sessions at the Aquarium. At the Zoo, the new South America exhibits, Skyfari, and the members' evening tours all received excellent press coverage. Announcements were sent to the media for the births of a gorilla, a tufted puffin, four tawny frogmouths, two Kodiak brown bears and four endangered bog turtles. The major conservation story of the year was the Society's agreement with the government of Kenya on Amboseli National Park, which prompted a congratulatory editorial in the *New York Times*.

Animal Kingdom, the magazine of the New York Zoological Society, was expanded to a larger page size. As the result of a trial subscription campaign, the number of new subscribers nearly doubled.



*The male proboscis monkey had his photograph taken to illustrate an *Animal Kingdom* article on monkey behavior.*



Newspapers across the country carried the story of Junior, the Zoo's king cobra.



Two Kodiak brown bear cubs made their press debut even before their mother allowed them out of the den.

Several articles of major importance appeared in the magazine, among them Dr. Neil Cheek's study of people and zoos, William G. Conway's report on the ovenbirds of Patagonia and their curious nesting habits, and "Stalking New York's Skin Traders" by Philip Weinberg, chief of the Environmental Protection Bureau of the New York State Attorney General's Office, who is in charge of operations for the enforcement of the Mason Law. Also published was a report on the white-naped cranes on their wintering grounds in Japan by George W. Archibald, Director of the International Crane Foundation, whose research the Society supports, and "A Tale of Two Eagles" by Joseph Bell, the Zoo's Curator of Ornithology. The latter is the story of the Zoo's loan of a male Philippine monkey-eating eagle to the Philadelphia Zoo for a cooperative breeding program for this highly endangered species.

The photography section of the department was involved with a wide variety of requests. A year-long project is the filming of activities at the Zoo and Aquarium, which results in the always-popular annual meeting film. *Animal Kingdom* regularly requires many photographs to illustrate articles. The animal hospital, vampire bats, monkey behavior, and the Osborn genetics laboratory were all photographed for the magazine. In addition, series of tiger and zebra identification photographs were taken for the mammal department, and series of 35mm slides of World of Birds exhibits and young birds were prepared for the bird department.

During 1973 the library received and catalogued 531 new volumes and added 3,183 periodical issues to its collection. An inventory of the Society's collection of rare books, some dating to 1633, was also prepared. With a grant under Title II-A of the Higher Education Act of the Department of Health, Education, and Welfare, funds were awarded to the library which enabled it to acquire additional materials for its collection.



The 1907 shipment of American bison from the Bronx Zoo, part of an early conservation program under Director William T. Hornaday (left), helped to restock the western ranges.

CONSERVATION COMMITTEE

"It was never intended, from the very beginning, that the Zoological Society's interests should be bounded by the fences around the Zoo and Aquarium." This statement by Fairfield Osborn, President of the New York Zoological Society from 1940 to 1969, is a reminder that the Society's worldwide commitment to conservation and zoological research is as old as the organization itself. Conservation is one of the purposes set forth in the original charter of 1896. The purpose and date are important because they mark the first time a zoological society ever officially took up the cause of wildlife protection.

The early efforts at conservation were particularly productive under the constant prodding of the Society's first director, William T. Hornaday. Allies were sometimes found in other organizations, such as state chapters of the Audubon Society. At other times Hornaday and the Society stood alone in their battles to curb the destruction of wild animals in North America. Many of the accomplishments are now so widely accepted that laymen have forgotten who was responsible for their creation.

Among the Society's credits are the laws that forbid the importation and sale of wild bird plumes; laws that forbid the sale of native game animals; the Migratory Bird Treaty with Canada

and Mexico; the nation-wide bag limit on the number of migratory birds that may be shot by hunters; the laws which replaced the over-exploitation of the Pribilof fur seals with a sustained-yield harvest; the first hunting laws for the Alaska territory; and the establishment of the program that saved the American bison from extinction.

Most—but not all—of those early efforts were directed toward conserving North American wildlife. Now, the balance has shifted. Today, the Society continues its efforts to protect wild animals in North America, but with the rise of other conservation organizations in this country, it can direct more of its efforts to the developing countries where wildlife problems are urgent and corrective resources are limited.

More than three dozen conservation and zoological research projects are underway in various parts of the world under the complete or partial sponsorship of the Society. Most of these projects entail study of the ecology or the behavior of a particular species—only through research can the needs of the animal be determined and conservation plans outlined.

The following projects, supported by the Society's restricted conservation funds, by donations, or by government contract, were funded in 1973:

- 73-01 Survey of Indian Ocean island birds of prey by Dr. Stanley A. Temple.
- 73-02 Conservation of the Bermuda cahow petrel by David Wingate, Bermuda Department of Agriculture and Fisheries.
- 73-03 Survey of cougar and wolf in the western hemisphere by Dr. Ronald Nowak (under contract from the United States Department of the Interior, Bureau of Sport Fisheries and Wildlife).
- 73-04 Study of the behavior and ecology of the elephant in western Malaysia by Dr. R. C. D. Oliver.
- 73-05 Survey of Amazonian primates by Russell A. Mittermeier.
- 73-06 Survey of the Barbary macaque by D. M. Taub.

- 73-07 Reception for the delegates to the conference that drafted the Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, D.C. (hosted jointly with the Smithsonian Institution and the World Wildlife Fund).
- 73-08 Funding for the Second Meeting of the Crocodile Specialist Group of the International Union for the Conservation of Nature and Natural Resources, held in Ndumu, South Africa.
- 73-09 Survey of Steller's albatross in Torishima by Dr. L. Tickell.
- 73-10 Survey of raptor nesting sites in the western United States by Dr. Frank Craighead.
- 73-11 Ecological survey of the bog turtle by John L. Behler.
- 73-12 Radio-telemetry study of the American crocodile in southern Florida by Jeffrey Land.
- 73-13 Study of the Kahama chimpanzee community in Gombe National Park, Tanzania, by Rueyongeza Mwenera.
- 73-14 Annual contribution for support of the International Union for the Conservation of Nature and Natural Resources, Morges, Switzerland.
- 73-15 Partial funding for delegates to the International Flamingo Symposium held at the Wildfowl Trust in Slimbridge, England.
- 73-16 Support for captive breeding of peregrine falcons by Dr. Tom Cade, Laboratory of Ornithology, Ithaca, New York.
- 73-17 Funding for a captive breeding program for endangered American desert fish under the direction of Dr. Robert R. Miller.
- 73-18 Grant to the Delta Waterfowl Research Station, Manitoba, Canada.
- 73-19 Contribution to the Royal Zoological Society of Antwerp to aid in the purchase of the Zegge Wildlife Preserve, Belgium.
- 73-20 Grant to the Bahamas National Trust in support of efforts to establish a resident breeding colony of green sea turtles on Great Inagua Island.

three years of action beyond our fences

"It was never intended, from the very beginning, that the Zoological Society's interests should be bounded by the fences around the Zoo and Aquarium."

Fairfield Osborn

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|--------------------------|--|------------------------|---|
| 1 Hawaii | Galapagos tortoise—captive propagation | 41 Argentina | Right whale research—Payne |
| 2 N. & S. America | Wolf & puma survey—Nowak | 42 England | International Flamingo Symposium |
| 3 N.W., U.S.A. | Raptor survey—Craighead | 43 Morocco | Barbary ape survey—Taub |
| 4 Montana | Wolverine ecology—Hornocker | 44 Belgium | Zegge Wetland Preserve purchase |
| 5 Wyoming | Jackson Hole Biological Research Station | 45 Switzerland | I.U.C.N.—Polar Bear Conference |
| 6 Colorado | Peregrine falcon propagation—Enderson | 46 Crete | Agriami goat ecology—Papageorgiou |
| 7 Arizona | Endangered desert spring fish—Miller | 47 Cameroon | African rainforest ecology—Struhsaker |
| 8 Texas | Texas blind salamander habitat (Ezell's cave) purchase | 48 Angola | Giant sable and wildebeest ecology—Estes |
| 9 Mexico | Morelet's crocodile morphology—King & Campbell | 49 Botswana | Okavango Swamp preservation |
| 10 Manitoba | Delta Waterfowl Research Station support | 50 South Africa | Second Crocodile Specialist Meeting |
| 11 Minnesota | Timberwolf ecology—Mech | 51 Kenya | Nile crocodile survey—King |
| 12 Galapagos | Charles Darwin Foundation support | 52 South Africa | Nile crocodile nesting ecology—Cott |
| 13 Florida | American crocodile ecology—Lang | 53 Uganda | Primates of Kibale forest—Struhsaker |
| 14 Pennsylvania | Bog turtle ecology—Behler | 54 Ethiopia | Civet survey—Davis |
| 15 Pennsylvania | Monkey-eating eagle—captive propagation | 55 Kenya | Survey of pesticides in Lake Nakuru—Brown |
| 16 Virginia | Whale conference | 56 Kenya | Amboseli National Park |
| 17 Florida | Audubon caracara census—Layne | 57 Kenya | Tana River Colobus—Marsh |
| 18 Costa Rica | Green turtle reserve boat | 58 Tanzania | Cheetah film—Abbott and Fuller |
| 19 Panama | Smithsonian Tropical Research Institute | 59 Tanzania | National Park consultation—Owen |
| 20 Columbia-Peru | Andean condor film—McGahan | 60 Tanzania | Group structure of wild chimps—Mwenera |
| 21 Washington | National Park short course—Florio (Argentina) | 61 Tanzania | African lion ecology and behavior—Schaller |
| 22 Washington | Golden Lion Marmoset Conference | 62 Mauritius | Indian Ocean island raptors—Temple |
| 23 Washington | Convention on International Trade in Endangered Species Wild Fauna and Flora | 63 Pakistan | Blue sheep, urial, markhor ecology—Schaller |
| 24 New York | Turtle <i>Salmonella</i> study—Behler | 64 Himalayas | Snow leopard survey—Schaller |
| 25 New York | Avian parasitology—Dolensek | 65 Nepal | Indian rhino ecology—Laurie |
| 26 New York | First Crocodile Specialist Meeting | 66 India | Northern swamp deer ecology—Schaaf |
| 27 New York | Peregrine propagation—Cade | 67 Nepal | |
| 28 New York | Crocodile vocalizations—Garrick and Beck | 68 Malaysia | Monitor ecology—Auffenberg |
| 29 Bahamas | Kirtland's warbler survey—Radabaugh | 69 Thailand | Siamang behavior and ecology—Chivers |
| 30 Bahamas | Green turtle propagation | 70 Ceylon | Elephant ecology—Oliver |
| 31 Bahamas | Land iguana ecology—Auffenberg | 71 Malaysia | Captive Anoa breeding project |
| 32 Bermuda | Humpback whale research—Payne | 72 Indonesia | Komodo monitor ecology—Auffenberg |
| 33 Bermuda | Cahow conservation—Wingate | 73 Indonesia | Mikado and Swinhoe's pheasant survey—Severinghaus |
| 34 Trinidad | Simla Biological Station | 74 Taiwan | Korean crane survey—Kim |
| 35 Brazil | Amazonian primates survey—Mittermeier | 75 South Korea | Steller's albatross survey—Tickell |
| 36 South America | Crocodilian survey—Medem | 76 Torishima | White-naped and sacred cranes survey—Archibald |
| 37 Bolivia | Vicuna survey | 77 Japan | Brolga crane survey—Archibald |
| 38 Bolivia | Flamingo survey—Kahl | 78 Australia | |
| 39 Argentina | Rheas development study—Bruning | 79 Papua | Crocodile bibliography—Downes |
| 40 Argentina | Patagonia film | 80 New Guinea | Bird-of-paradise exploitation survey—Healey |



One of the Society's current conservation projects involves the use of radio telemetry to study snow leopards.

- 73-21 Extension of support for the survey of South American crocodilians being conducted by Federico Medem.
- 73-22 Study of the ecology of the wolverine in northwestern Montana by Dr. Maurice Hornocker.
- 73-23 Continuation of support for an ecological survey of the Cretan wild goat by George Papageorgiou.
- 73-24 Survey of the northern swamp deer in India and Nepal by Dr. Dietrich Schaaf.
- 73-26 Continued support of the peregrine falcon captive-breeding program of Dr. James H. Anderson.
- 73-27 Study of the inter-relationship of men and monitor lizards in southeastern Asia by Dr. Walter Auffenberg.
- 73-28 Ecological study of the rock iguanas of the Bahama Islands by Dr. Walter Auffenberg.
- 73-29 Radio-telemetry study of snow leopards by Dr. George Schaller and Melvin Sunquist.
- 73-30 Study of the ecology of the bird-of-paradise and of the native plume trade by Christopher J. Healey.*
- 73-31 Partial support of a Kalimantan orang-utan study and rehabilitation-to-the-wild project conducted by Rod and Birute Brindamour.*
- 73-32 Continued support of the study of the Tana River red colobus monkey in Kenya by Clive Marsh.*
- 73-33 Grant to the Asa Wright Nature Center, Trinidad.
- 73-34 Study of the ecology of Korean cranes by Dr. Kim Hon Kyu.*
- 73-35 Captive propagation of the Madagascan radiated tortoise by the New York Zoological Society and Dr. Walter Auffenberg.

*The Charlotte Ordway Wyman Wildlife Protection Fund

- 73-36 Reception for delegates to a United Nations meeting on the Law of the Sea Conference (hosted jointly with the Sierra Club).
- 73-37 Support of the Jackson Hole Biological Research Station.
- 73-38 Print of the film *Wild Gold* sent to the Okavango Wildlife Society of South Africa to be used in a fund-raising drive to save the Okavango Swamp in Botswana from drainage.

In addition, the Society's own staff conducted its conservation-related research. Dr. George Schaller continued his studies on Himalayan goats, sheep, and snow leopards. Dr. Thomas Struhsaker began his fourth year of study on the primates in the Kibale Forest of Uganda, and Dr. Roger Payne spent the year in Argentina gathering data on whales. While William G. Conway continued his investigations into the conservation of flamingos, Dr. F. Wayne King collaborated with several colleagues in an expanded study on the morphology, distribution, and ecology of the endangered Morelet's crocodile.

Mr. Conway, Dr. Schaller, Dr. Struhsaker, and Dr. King served on the IUCN's Survival Service Commission Zoo Liaison Group, and the Cat, Primate, Reptile-Amphibian, and Crocodile Specialists Groups. Mr. Conway also served as Chairman of the Accreditation Commission for the American Association of Zoological Parks and Aquariums, and Dr. King was Chairman of the AAZPA Wildlife Conservation Committee. The Society received a special AAZPA award in 1973 in recognition of the excellence of its conservation program.



The Society has established a special "off-campus" breeding program for the highly endangered Madagascan radiated tortoise.



Under a government contract, a Society researcher is surveying wolf populations in the western hemisphere.



A study of Amazonian primates, including the howler, will attempt to gather information before the area undergoes massive development.

Mr. Conway and Dr. King were members of the United States delegation to the plenipotentiary conference which met in Washington, D.C., to draft the Convention on International Trade in Endangered Species of Wild Fauna and Flora. This was the first international treaty aimed at ending illegal smuggling of endangered plants and animals, hides, furs, feathers, roots, seeds, and other products. Delegates from eighty nations attended. Following the conference, Dr. King, together with representatives of other conservation organizations, met with officials of the U.S. Department of the Interior, Fish and Wildlife Service, to draft the bills that would implement the Convention. After wending their way through the Congress, the bills emerged as the federal Endangered Species Act of 1973.

The scientific staff of the Society continued to assist the agents of the U.S. Fish and Wildlife Service in its task of identifying all live animals and wildlife products imported into the United States. Similar services were provided to several state conservation agencies.

The largest captive group of the Madagascan radiated tortoise was purchased from a private citizen and added to the Society's breeding program for endangered species. The group of twenty-five animals is being kept in Florida where the warm climate permits outdoor maintenance of reptiles. This is the first of the Society-owned endangered species breeding units to be located outside the metropolitan New York City area. It is not the last, however, as a search is underway for several large tracts of land in scattered parts of the country where rare and endangered wildlife can be propagated.

Were he alive today, William T. Hornaday would be proud of the ways in which the Society's program of wildlife protection and zoological research have grown both in variety and magnitude—a fulfillment of the charter's promise.

CENTER FOR FIELD BIOLOGY AND CONSERVATION

The year began and ended with the research associates of the Center for Field Biology and Conservation engaged in field work on four continents. January found Dr. George Schaller in Chitral, Pakistan, observing markhor goats at the height of the winter, when snow is deep and forage sparse. A snow leopard census was also made. Even though the cats have, at that season, concentrated in the valley, making it relatively easy to locate their spoor, evidence was found for only four snow leopards in a 300-square-mile mountain area, and one of these animals was later shot by a villager.

Having studied the rut of urial sheep and wild goat during autumn, 1972, Dr. Schaller devoted March and April of 1973 to observing the birth season of these two species. The wild goat, whose habitat has been affected by drought for several years, had poor reproductive success. Although yearlings took part in the rut, most failed to conceive, and an estimated fifteen to twenty percent of the adult females also failed to give birth. However, among the urial, which had a good year with respect to the availability of nutritious food, most yearlings and adult females had young. The erratic rainfall patterns in this part of the world probably have a marked effect on the population dynamics of some ungulates.

The status and distribution of most ungulate species and subspecies in Pakistan remain obscure, and a number of surveys were made to gather data, particularly on threatened forms. One purpose of such surveys is to find areas which deserve the status of wildlife sanctuaries and national parks. On the basis of these trips, recommendations for wildlife preservation were submitted to the Pakistan government. Acting with promptness, the government banned all shooting of large mammals in the northern mountains until further notice.



In western Nepal, Dr. Schaller made a detailed behavioral study of the rut of the blue sheep. The behavioral work was done during November and early December at altitudes of 15,000 to 16,000 feet. Although blue sheep are, in fact, goats, their rutting behavior revealed a fascinating array of behavioral traits that show affinities to both sheep and goats. Some of these traits have no doubt been shaped by the habitat, which resembles that of North American sheep. However, certain other traits are not under strong ecological influences. The evidence suggests the behavior of blue sheep may be similar to that of the ancestral form of goat, from which the present-day *Capra* and *Ovis* lineages diverged.



At left: High in the Himalayas, Dr. George Schaller (left) studies an area map with Major Amanullah Khan, administrator of the Pakistan Wildlife Appeal. Above: Dr. Roger Payne inspects the jawbone of a whale found on a Patagonian beach.

Dr. Roger Payne remained in the field in Argentina during 1973, where he continued his study on the social behavior and vocalization of whales. Monthly air flights provided behavioral information and made it possible to trace movements of known individuals throughout the season. Whales first seen in 1971 and 1972 were encountered again, including an albino calf born in 1971.

Prolonged observations of the whales were made daily by the researchers at Peninsula Valdez. The changing composition of the herd with the progressing season was linked with over-all changes in behavior patterns and sounds. Surface activities—

breathing, breaching, lobtailing, and something that seems to be sailing (with the tail held stiffly aloft perpendicular to the wind and with the head down)—were studied in detail. Several kinds of play were seen, including play by new calves near their mothers, and play between whale calves and sea lions. Feeding was also observed in detail, which puts into question the old theory that whales basically “starve” throughout the winter.

This wealth of biological information was collected in an area whose future is threatened by industrial development. At Puerto Madryn, construction has begun of an aluminum factory, and of a fluorite plant which will pump hydrofluoric acid fumes into the air. Twenty other industries are planned, including five fishmeal plants. The petroleum industry has started an intensive search for oil and in the process is constructing a network of roads. Thus, the prospect for the survival of the whales and other wildlife in this area is dim.

In the Kibale Forest of Uganda, Dr. Thomas Struhsaker continued his research on the red colobus monkey and began a study of the red-tail monkey. One group of about twenty-five red-tails has now been habituated. It has a much smaller home range and covers a much greater area in its daily foraging than a group of red colobus of similar size. Fruit and unidentified objects (believed to be insects) comprise the bulk of the red-tail diet.

Red-tail groups range in number from about twenty to thirty-five, with most having only one fully adult male. Territories are about twenty to twenty-five hectares in size. Red-tails defend territories against neighboring groups, and all members participate in the defense. This is in marked contrast to red colobus groups whose home ranges overlap extensively with other red colobus groups.



*Above: A playful right whale breaches near the Society's research station in Argentina.
Opposite, top: Donald F. Bruning carefully weighs a young rhea hatched at the Bronx Zoo.
Opposite, bottom: The NYZS has initiated the first intensive study of the Indian rhinoceros.*

The main study area in the forest, comprising about 260 hectares of relatively undisturbed and mature rain forest, has been officially declared a research plot by the Uganda Department of Forestry and will not be felled for timber as previously planned.

The Indian rhinoceros is a threatened species with fewer than 1,000 survivors in the world. The first intensive study of this species was initiated by Andrew Laurie in Chitawan National Park, Nepal, with additional data collected in the Kaziranga Sanctuary in India. Mr. Laurie has concentrated his research on the distribution and status of rhinos in Chitawan, on elucidating population dynamics, on assessing seasonal changes in abundance of forage, and on observing behavior,

particularly social interactions and activity patterns. Considerably more rhinos inhabit the tract than was surmised by earlier investigators. Mr. Laurie recognized 151 individual rhinos during 1973, and evidence has been found for at least fifty to sixty more, revealing a population almost twice as large as previously estimated.

Leslie Garrick began work on crocodilians under a post-doctoral grant from the Society. The main aims of his study are to catalogue and analyze the acoustical repertoire of various crocodilian species, to ascertain the internal and external conditions facilitating vocalizations, and to investigate the functions of the vocalizations. Sound spectrograms have been completed for ten species so far,

with the most detailed work having been done on the inter-specific relationships of call structure and function of *Alligator mississippiensis* and *Alligator sinensis*.

At the Bronx Zoo, Donald Bruning continued his research on the reproductive biology and behavior of the gray rhea. Fifty-two rhea chicks were reared in 1973. It is interesting to note that, due to mutual stimulation, two eggs hatched after only a twenty-eight day incubation period, as compared to a normal period of thirty-six to thirty-eight days. This mutual stimulation, which results in a maximum number of chicks hatching simultaneously, is a significant adaptation that has been recorded from only a few other avian species.



OSBORN LABORATORIES OF MARINE SCIENCES

Scientists at the Osborn Laboratories of Marine Sciences continued to conduct basic research on a diverse array of aquatic animals. They seek to uncover phenomena that will aid in the explanation of life processes applicable to other life forms.

Dr. Ross F. Nigrelli and Dr. George D. Ruggieri, S.J., in collaboration with scientists at Coney Island Hospital, have been analyzing the blood of horseshoe crabs. Relatively unchanged since they first appeared on earth over 300 million years ago, these hardy animals can be bled periodically with no adverse effects. Their blood, pale blue in color, contains only one type of cell. A preparation of these blood cells is now used in hospitals to determine whether human patients are suffering from bacterial endotoxin and to measure the severity of blood poisoning in the patient.

There are approximately 5,000 species of sponges, all of them aquatic, most of them marine. These primitive animals are sedentary, filter feeders, with an ability to deal with the bacteria in the marine environment. Dr. Martin F. Stempien, Jr., has extracted a number of interesting chemicals from a variety of species. Some of these substances exhibit a broad spectrum of antibiotic properties. Other chemical substances from sponges are being tested for anti-viral activity and for their potential use against certain types of cancer.

Since man first took to the sea in ships, he has considered the barnacle a nuisance organism. Ocean-going vessels, heavily pitted with these invertebrates, are slowed down considerably and are forced to expend excessive amounts of fuel. Barnacles adhere to ships by secreting a cement that hardens very rapidly. As the chemical structure of the cement is modified when this occurs, Dr. Paul J. Cheung developed a technique for collecting this adhesive material in a liquid state, a necessary prelude to its chemical characterization. Once the chemical nature of the cement has been determined, it should be possible to devise specific inhibitors to



prevent the barnacles from adhering to ships. At the same time, it will provide man with an effective cement that has a variety of potential uses, including a synthetic filling for cavities in teeth.

Dr. Kenneth Gold has developed a number of techniques for maintaining unicellular forms under strictly controlled conditions for long periods of time. Of particular interest is a group of protozoa known as tintinnids. They are extremely abundant, serve as food for various types of marine animals, and are capable of absorbing various types of toxic substances on their sticky surfaces. They may, therefore, play a significant role in the transfer of toxic heavy metals to higher life-forms.

Some one-celled organisms wreak havoc with other members of the living community in the sea. One of these is responsible for periodic red-tide outbreaks resulting in mass mortalities of fish and shellfish. Dr. Gold and Dr. Kathryn Pokorny have been employing a number of techniques, including electron microscopy, in an effort to determine why these toxic forms reproduce so prolifically, while non-toxic related forms, also resident in the area, do not.

Dr. Pokorny and Dr. Nigrelli are studying another protozoan that causes death in a number of different kinds of fishes. Certain of the effects of this one-celled parasite on fish cells are somewhat similar to those encountered with viruses. The parasite appears to be entirely dependent upon the host cell, even to the point of directing it to alter its biochemical machinery to produce substances not otherwise normally made, but which are essential for the continued existence of the parasite.

Some cells are grown in totally artificial environments. Dr. Jack Cecil has been growing cells from a variety of organs of marine mammals, fish, and invertebrates in test tubes and vials. This enables him to study the effects of

certain cancer-causing chemical agents (carcinogens) on cells in culture. Such studies should lead to basic information on tumor formation, not only in fish and mammals but also in certain marine invertebrates. Such studies may provide clues as to why neoplastic growths (cancers) have never been reported to occur in many marine invertebrates.

One of the more exciting events in the Genetics Laboratory was Dr. Klaus D. Kallman's discovery that the age at which platyfish and swordtails reach sexual maturity is under the control of a single gene. Since males stop growing when the testis ripens, early-maturing fish attain a smaller adult size than late-maturing ones. Although the same genes are active in the opposite sex, females do not stop growing when the ovary ripens, hence the types of females, unlike the males, are similar in size. The ovaries, however, are of unequal size at the time of sexual maturity. Late-maturing females have larger initial broods than early-maturers. These studies should provide a genetic model for the selection of rapidly breeding stocks of food fishes and for the acceleration of the life cycle of certain economically important fishes.

Many desert fishes in the southwestern United States and northern Mexico are in danger of extinction because of habitat destruction. One of the endangered pupfish from Death Valley, Nevada, is being bred and maintained in the Genetics Laboratory. The variety of desert pupfish species are important because they constitute a living example of rapid speciation within a rather small geographical area. Another threatened pupfish from Mexico has been maintained for twenty-three generations by Dr. Kallman. These fish are used to study the genetics of tissue transplantation and melanoma (pigment cell cancer) formation.

The ancient seas, still vast and deep, are becoming less mysterious. And the unraveling of mysteries not only assuages man's innate and insatiable urge to know, it provides him with model systems which contribute to his well-being.

Dr. George Ruggieri, director of the Osborn Laboratories of Marine Sciences, employs the electron microscope to examine "invisible" aquatic creatures.

JACKSON HOLE BIOLOGICAL RESEARCH STATION

During 1973, the New York Zoological Society continued to support research at the Station. Funds were awarded to seven investigators from five different institutions for the following projects:

Franz J. Camenzind, University of Wyoming

Ecology and behavior of the coyote in Jackson Hole, Wyoming.

Frederick J. Jannett, Jr., Cornell University

Social dynamics of the montane vole, *Microtus montanus*, and their population consequences.

Gordon A. McFeters, Montana State University

Microbial studies of a high alpine water supply used for recreation.

John M. McGee, University of Wyoming

Effects of prescribed burning on vertebrate fauna of a douglas-fir forest.

Michael Parker, University of Wyoming

Nutrient limitation of aquatic primary production in Grand Teton National Park.

Aelita J. Pinter, Louisiana State

University in New Orleans

Effects of environmental variables on some physiological responses of *Microtus montanus* under natural conditions.

David E. Worley, Montana State

University

Studies on the prevalence of arterial worms and meningeal worms in moose in the Jackson Hole area of Wyoming.

*A herd of wapiti grazes before
the Grand Tetons near Jackson
Hole, Wyoming.*



CENSUS OF THE ANIMAL COLLECTIONS

MAMMALS

<i>Orders:</i>	<i>Families</i>	<i>Species & Subspecies</i>	<i>Specimens</i>
Marsupialia—Kangaroos, phalangers, opossums	4	7	25
Insectivora—Moles, shrews, hedgehogs, etc.	4	2	3
Chiroptera—Bats	4	12	30
Primates—Apes, monkeys, lemurs, marmosets, etc.	7	29	111
Edentata—Armadillos, sloths, anteaters	3	4	8
Rodentia—Squirrels, beavers, mice, porcupines, etc.	12	17	57
Carnivora—Bears, raccoons, cats, dogs, otters, etc.	6	36	110
Pinnipedia—Seals, sea lions, walruses	2	2	4
Proboscidea—Elephants	1	2	7
Hyracoidea—Hydrax	1	1	1
Perissodactyla—Horses, tapirs, rhinoceroses	3	6	23
Artiodactyla—Cattle, sheep, antelopes, camels giraffes, deer, swine, hippopotamuses	8	34	441
Total	53	152	820

BIRDS

<i>Orders:</i>	<i>Families</i>	<i>Species & Subspecies</i>	<i>Specimens</i>
Sphenisciformes—Penguins	1	5	11
Struthioniformes—Ostriches	1	2	3
Rheiformes—Rheas	1	1	20
Casuariiformes—Cassowaries, emus	2	2	7
Tinamiformes—Tinamous	1	2	12
Podicipediformes—Grebes	1	2	2
Pelecaniformes—Pelicans, cormorants, etc.	2	6	21
Ciconiiformes—Hérons, ibises, storks, etc.	4	17	53
Phoenicopteriformes—Flamingos	1	6	57
Anseriformes—Swans, ducks, geese, etc.	2	77	517
Falconiformes—Vultures, hawks, eagles	3	14	32
Galliformes—Quail, pheasants, etc.	3	17	95
Gruiformes—Hemipodes, cranes, trumpeters, etc.	5	22	144
Charadriiformes—Plovers, sandpipers, gulls, etc.	9	33	195
Columbiformes—Pigeons, doves, sandgrouse	1	6	12
Psittaciformes—Parrots, etc.	1	10	26
Cuculiformes—Touracos, cuckoos	2	10	24
Strigiformes—Owls	1	10	26
Caprimulgiformes—Frogmouths, night hawks, etc.	1	1	10
Apodiformes—Hummingbirds	1	5	8
Trogoniformes—Trogons, quetzals	1	2	5
Coraciiformes—Kingfishers, hornbills, etc.	6	10	30
Piciformes—Barbets, toucans, woodpeckers	4	14	25
Passeriformes—Perching birds	34	113	311
Total	88	387	1,646

AMPHIBIANS AND REPTILES

<i>Orders:</i>	<i>Families</i>	<i>Species & Subspecies</i>	<i>Specimens</i>
Caudata—Salamanders	3	9	24
Salientia—Frogs	11	27	126
Chelonía—Turtles	7	27	80
Crocodylia—Crocodilians	3	19	72
Squamata—Lizards, snakes	19	90	309
Total	43	172	611

AQUARIUM

Phylum: Chordata

Species and
Subspecies Specimens

Class: Chondrichthyes (Sharks, rays and chimeras)

Orders:

Squaliformes—Typical sharks

2 5

Rajiformes—Rays

2 3

Class: Osteichthyes (Bony fishes)

Orders:

Clupeiformes—Tarpon, bonefish

1 2

Cypriniformes—Catfish, minnows

4 42

Anguilliformes—True eels

4 7

Cyprinodontiformes—Killifishes

3 90

Gadiformes—Codfishes

1 1

Gasterosteiformes—Sticklebacks, pipefish, seahorses, etc.

4 66

Beryciformes—Squirrelfishes

1 3

Perciformes—Perch-like fishes

85 336

Pleuronectiformes—Flatfishes

2 27

Tetraodontiformes—Trunkfish, triggerfish, puffers, etc.

2 2

Batrachoidiformes—Toadfishes

1 8

Dipnoi—Lungfish

1 1

Class: Reptilia

Order:

Chelonia—Turtles

4 15

Class: Aves

Order:

Sphenisciformes—Penguins

2 23

Class: Mammalia

Orders:

Pinnipedia—Sea lions, seals

4 13

Cetacea—Whales, dolphins

2 5

Phylum: Coelenterata

Class: Anthozoa (Corals and anemones)

9 175 +

Phylum: Annelida

Class: Polychaeta (Marine worms)

3 130 +

Phylum: Arthropoda

Class: Crustacea (Lobster, shrimps, crabs, etc.)

7 139

Class: Arachnida (Horseshoe crab)

1 8

Phylum: Mollusca

Class: Gastropoda (Snails)

2 85 +

Class: Cephalopoda (Octopus)

1 1

Phylum: Echinodermata

Class: Asteroidea (Starfish)

7 90

Class: Holothuroidea (Sea cucumbers)

1 5

Class: Echinoidea (Sea urchins)

1 10

Totals 157 1,292 +

Combined Census

Species and
Subspecies Specimens

Zoo

711 3,077

Aquarium

157 1,292 +

868 4,369 +

Attendance 1973

New York Zoological Park

2,144,864

New York Aquarium

586,574

NEW YORK ZOOLOGICAL SOCIETY
BALANCE SHEET

December 31, 1973

Exhibit A

	Current funds		Unexpended	Land, buildings, animals and equipment funds	Endowment funds and funds functioning as endowment
	General	Restricted		Equity in land, buildings, animals and equipment	
Assets:					
Cash	\$265,323	30,050	14,003		48,340
Certificate of deposit			665,000		
Accounts receivable	477,243	83,404			
Grants receivable (note 2)		356,144	3,953,000		
Note receivable					31,873
Pledges receivable (net of \$7,200 allowance—current general fund)	35,728	17,000	253,995		
Inventories, at lower of cost or market	52,264	244,341			
Prepaid expenses and deferred charges	166,635	10,537			
Investments (note 3)			765,965		11,254,003
Due from other funds		633,278			485,648
Equipment—visitor facilities, at cost (net of accumulated depreciation of \$561,194)—(note 4) . .				288,262	
Other land, buildings, animals and equipment (note 4)				5	
Total assets	\$997,193	1,374,754	5,651,963	288,267	11,819,864
Liabilities and fund balances:					
Accounts payable and accrued expenses	420,979	6,226	261		
Deferred revenue—contributions pledged for future years' operations	13,677	17,000			
Due to other funds	562,537		556,389		
Fund balances (deficit)—(Exhibit C):					
General					
Restricted		1,351,528			
Unexpended land, buildings, animals and equipment—restricted			5,095,313		
Investment in land, buildings, animals and equipment				288,267	
Endowment					2,945,500
Funds functioning as endowment—unrestricted					8,874,364
Total liabilities and fund balances	\$997,193	1,374,754	5,651,963	288,267	11,819,864

See accompanying notes to financial statements.

NEW YORK ZOOLOGICAL SOCIETY
SUMMARY OF FINANCIAL ACTIVITIES

Year ended December 31, 1973

		Exhibit B
Revenues:		
Fees and grants from governmental units		\$2,979,795
Program service fees and other revenue . . .		1,043,884
Income from visitor facilities (after deducting \$1,747,904 of directly related costs and expenses)		551,543
Investment income		453,128
Membership dues		235,085
Miscellaneous		21,541
Total revenues		<u>5,284,976</u>
Support from the public—contributions, grants and bequests		1,328,400
Total revenues and support		<u>6,613,376</u>
Deduct revenues and support limited by donors (Exhibit C):		
Currently expendable, but only as specified by agreement	\$4,790,690	
Construction and acquisition of land, buildings, animals, and equipment . . .	<u>646,675</u>	
Total limited revenues and support		<u>5,437,365</u>
Amount available to finance current general expenditures . .		1,176,011
Expenditures:		
Program services	5,406,396	
Supporting services	604,013	
Major acquisitions of land, buildings, animals, and equipment	<u>2,039,615</u>	
Total expenditures	<u>8,050,024</u>	
Deduct expenditures financed by special funds (Exhibit C):		
Current restricted funds	\$3,969,940	
Unexpended land, buildings, animals, and equipment funds	<u>2,039,615</u>	<u>6,009,555</u>
Expenditures financed by current general revenues and support . .		<u>2,040,469</u>
Excess of current general expenditures over related revenues and support		864,458
Deduct transfers:		
To unexpended land, buildings, animals, and equipment funds—net income from aquarium's visitor facilities	82,892	
To funds functioning as endowment—contributions designated by Trustees for general development	<u>280,275</u>	
		<u>363,167</u>
Decrease in current general fund.		<u>\$1,227,625</u>

See accompanying notes to financial statements.

NEW YORK ZOOLOGICAL SOCIETY
STATEMENT OF CHANGES IN FUND BALANCE

Year ended December 31, 1973

Exhibit C

	Current funds		Land, buildings, animals and equipment funds	Equity in land, buildings, animals and equipment	Endowment funds and funds functioning as endowment	Funds functioning as endowment
	General	Restricted				
Balance (deficit) at beginning of year	\$ (808,161)	1,188,222	5,842,955	328,601	2,826,916	10,241,518
Additions:						
Current revenue, expendable only as specified by agreement		4,772,909				
Contributions, grants and appropriations for unexpended land, buildings, animals and equipment fund			577,744			
Investment income		17,781	61,786			
Gains on disposal investments, net					108,584	393,420
Other			7,145			
Total additions		4,790,690	646,675		108,584	393,420
Deductions:						
Decrease in current general fund (Exhibit B)	1,227,625					
To finance expenditures of current funds . .		3,969,940				
Indirect costs recovered on research grants		86,188				
Amounts expended for land, buildings, animals, and equipment			2,039,615			
Provision for depreciation (note 4)				40,334		
Other		3,913				
Total deductions	1,227,625	4,060,041	2,039,615	40,334		
Transfers between funds	2,035,786*	(567,343)	645,298		10,000	(1,760,574)
Balance at end of year	\$	1,351,528	5,095,313	288,267	2,945,500	8,874,364

*Current general fund transfers are reported on Exhibit B, except for this sum representing the accumulated deficit at the end of the year appropriated from funds functioning as endowment.

See accompanying notes to financial statements.

NEW YORK ZOOLOGICAL SOCIETY
NOTES TO FINANCIAL STATEMENTS
DECEMBER 31, 1973

(1) SUMMARY OF
SIGNIFICANT ACCOUNTING
POLICIES:

The Society follows the standards of accounting and financial reporting for voluntary health and welfare organizations developed by the National Health Council and the National Assembly for Social Policy and Development. Accordingly, the financial statements have been prepared on the accrual basis of accounting and include all material accounts receivable and payable, prepaid expenses, deferred charges and credits and all other receivables and payables of importance.

In order to ensure observance of limitations and restrictions placed on the use of the available resources, the accounts and financial activities are classified for accounting and reporting purposes into fund groups that are in accordance with activities or objectives specified. Separate accounts are maintained for each fund; however, in the accompanying financial statements, funds that have similar characteristics have been combined into fund groups. Accordingly, all financial transactions have been recorded and reported by fund group.

Within each fund group, fund balances restricted by outside sources are so indicated and are distinguished from unrestricted funds. Externally restricted funds may only be utilized in accordance with the purposes established by the source of such funds and are in contrast with unrestricted funds over which the governing board retains full control to use in achieving any of its purposes.

Endowment funds are subject to the restrictions of gift instruments requiring in perpetuity that the principal be invested and the income only be utilized. While funds functioning as endowment have been established by the governing board for the same purposes as endowment funds, any portion of such funds may be expended.

All gains and losses arising from the sale, collection or other disposition of investments and other noncash assets are accounted for in the fund which owned such assets. Income derived from investments of endowment funds and funds functioning as endowment is accounted for in the fund to which it is restricted or, if unrestricted, as revenues in the current general fund.

All other unrestricted revenues are accounted for in the current general fund. Restricted contributions, grants and bequests are accounted for in the appropriate restricted funds.

Other significant accounting policies are set forth in the financial statements and the following notes.

(2) GRANTS RECEIVABLE:

Grants receivable of the current restricted and unexpended land, buildings, animals, and equipment funds represent amounts pledged to the Society for certain operations and for the completion of designated projects in future years. The grants will be collected as expenditures for the designated projects are made by the Society.

(3) INVESTMENTS:

Investments are stated at cost or, if acquired by gift, at fair market value at dates of acquisition. The quoted market value at December 31, 1973 was \$760,863 for unexpended land, building, animal, and equipment funds and \$12,691,007 for endowment funds and funds functioning as endowment.

(4) LAND, BUILDINGS,
ANIMALS AND EQUIPMENT:

Expenditures for land, buildings, animals, and equipment have been charged to operations and to unexpended land, buildings, animals, and equipment funds.

In prior years, only the cost of equipment of the visitor facilities placed in service was capitalized in the equity in land, buildings, animals, and equipment. In the current year, the cost of equipment of visitor facilities placed in service was not capitalized in the equity in land, buildings, animals, and equipment. The capitalized equipment of the visitor facilities at December 31, 1973 is being written off over its estimated useful life on a straight-line basis.

Other assets including, but not limited to, the following are recorded in the equity in land, buildings, animals, and equipment fund at the nominal value of \$5:

National collection of heads and
horns, art gallery, library, and
sundry items

Collection of living animals

Coney Island real estate

Land and buildings made available
by the City of New York

(5) COMMITMENTS:

The New York Zoological Society and the City of New York have agreed to construct an aquarium, as funds become available, at an estimated total cost (to be shared equally) of \$7,100,000, of which the initial stage (costing approximately \$1,550,000) was completed May 31, 1957.

The Society and the City of New York have also agreed to construct a Tropical Asia Exhibit, as funds become available, at an estimated total cost of \$12,000,000. The amount of participation by each has not been determined. As part of the Exhibit, the Society contracted for the construction of a monorail system at a cost of \$2,470,000.

(6) PENSION PLAN:

There are two pension plans, covering substantially all of the Society's full-time employees. The total pension expense for 1973 was \$137,000. The Society's policy is to fund pension cost accrued, and no unfunded past service cost or unfunded vested benefits existed at December 31, 1973. The assets of the pension fund approximated \$3,500,000 including securities with a market value of \$2,850,000 at December 31, 1973.

(7) OTHER:

The Society is the ultimate beneficiary under a trust held by Community Funds, Inc. of New York, N.Y. The income arising from the investments of the principal sum is paid to the Society for current restricted purposes.

The Board of Trustees
New York Zoological Society:

We have examined the balance sheet of New York Zoological Society as of December 31, 1973 and the related summary of financial activities and statement of changes in fund balances for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, except for the valuation of certain fixed assets as described in note 4 of notes to financial statements, the aforementioned financial statements present fairly the financial position of New York Zoological Society at December 31, 1973 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat, Marwick, Mitchell & Co

April 5, 1974

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Hugh B. House
F. Wayne King
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Treasurer
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F. Wayne King, Director, Conservation and Environmental Education
Walter Lerchenfeld, Director, Finance and Administration
John McKew, Director, Special Projects
Anthony DeSiena, Financial Manager
Timothy O'Sullivan, Personnel Manager
Demetrios Sazani, Manager, Visitor Services
Harold C. Palmer, Membership Chairman
John Sutton, Assistant Curator, Exhibition
Elie Aliman, Assistant Curator, Graphic Arts
Simon Dresner, Editor and Curator, Publications and Public Relations
Joan Van Haasteren, Assistant Curator, Publications and Public Relations
Dorothy Reville, Photo Librarian
Sam Dunton, Photographer

ZOOLOGICAL PARK

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Charles B. Driscoll, Director, Operations
Joseph Bell, Curator, Ornithology
Donald F. Bruning, Associate Curator, Ornithology
Hugh B. House, Curator, Mammalogy
James G. Doherty, Associate Curator, Mammalogy
F. Wayne King, Curator, Herpetology
John L. Behler, Assistant Curator, Herpetology
Joseph A. Davis, Scientific Assistant to the Director
James W. Waddick, Associate Curator in Charge of Education
Herbert J. Knobloch, Curator, Audio-Visual Services
Robert A. Brown, Associate Curator, Early Childhood Education
Marie Sexton, Coordinator of Volunteer Services

William Bridges, Curator of
Publications Emeritus
Grace Davall, Curator Emeritus
Roland Lindemann, Consultant,
Mammal Management
Walter Auffenberg, Research Associate,
Herpetology
D. Michelle Irwin, Consultant,
Early Childhood Education
Jean Delacour, Field Associate in
Ornithology
Ostrom Enders, Field Associate in
Ornithology
Winston Guest, Jr., Field Associate in
Ornithology
Frank Y. Larkin, Field Associate in
Ornithology
William K. Macy, Jr., Field Associate in
Ornithology
Charles Sivelle, Field Associate in
Ornithology
Charles D. Webster, Field Associate in
Ornithology

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George D. Ruggieri, S.J.,
Associate Director
William S. Flynn, Curator
Karen Hensel, Assistant Curator,
Education
Frank Domon, Superintendent,
Operations
Louis Mowbray, Research Associate,
Field Biology
Christopher W. Coates,
Director Emeritus

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George D. Ruggieri, S.J., Director and
Experimental Embryologist
Ross F. Nigrelli, Senior Scientist
Martin F. Stempien, Jr., Assistant to the
Director and Bio-organic Chemist
Jack T. Cecil, Virologist
Paul J. Cheung, Microbiologist
Joginder S. Chib, Chemist
Kenneth Gold, Marine Ecologist
Myron Jacobs, Neuroanatomist
Klaus D. Kallman, Fish Geneticist
Kathryn S. Pokorny, Electron
Microscopist
Eli D. Goldsmith, Scientific Consultant
Erwin J. Ernst, Research Associate,
Estuarine and Coastal Ecology
Martin P. Schreiber, Research
Associate, Fish Endocrinology

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George Schaller, Research Zoologist
and Coordinator
Roger Payne, Research Zoologist
Thomas T. Struhsaker,
Research Zoologist
Donald F. Bruning, Research Associate
Leslie Garrick, Research Fellow

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Emil P. Dolensek, Veterinarian
Consultants:
John Budinger, Pathology
Ben Sheffy, Nutrition
Robert Byck, Pharmacology
Harold S. Goldman, Radiology
Lucy Clausen, Parasitology
Jay Hyman, Aquatic Mammal Medicine
Theodore Kazimiroff, Dentistry
Henry Clay Frick, Obstetrics and
Gynecology
Susan Williamson, Obstetrics and
Gynecology
Uri Adar, Pediatric Orthopedics
Roy Bellhorn, Comparative
Ophthalmology
Paul Henkind, Comparative
Ophthalmology
Alan Friedman, Comparative
Ophthalmology
Richard Lee, Internal Medicine
Thomas Blumenfeld, Pediatrics
Alan Belson, Resident in Pathology

The future and effectiveness of the Society's programs in wildlife conservation and environmental education will depend to a large extent on the generosity of its many members and friends. One of the most effective ways of providing for the Society is through a bequest. If you wish to include a charitable bequest provision in your will, the following form is suggested:

FORM OF BEQUEST

"I bequeath _____ to the New York
Zoological Society, Bronx, New York, for
its general purposes."

(To the extent provided by law, contributions to the Society are deductible for Federal income and gift tax purposes. Bequests to the Society are deductible for Federal estate tax purposes)

For further information, contact:
William J. C. Carlin
Director of Development & Public Relations
New York Zoological Society
Bronx, New York 10460
212-933-5724



Front cover: Beauty is in the eye of the beholder, and, to bird curators, a newly-hatched tiger bittern chick is a beautiful sight. Back cover: At the end of "class," a Walton High School student returns a pony to the barn for the final grooming of the day.

Design by Michael Amberger

PHOTO CREDITS

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A Siberian tiger mother and cub illustrate what a zoo is all about.







